

**ON REGULARIZATION METHODS OF EM-KACZMARZ TYPE****Elena Resmerita**Institute of Industrial Mathematics  
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The EM (Expectation-Maximization) algorithm is a convenient tool for approximating maximum likelihood estimators in situations when available data are incomplete, as it is the case for many inverse problems. Our focus here is on the continuous version of the EM algorithm for a Poisson model, which is known to perform unstably when applied to ill-posed integral equations. We interpret and analyse the EM algorithm as a regularization procedure. In the case of perturbed data, a stopping rule of discrepancy type is provided, under boundedness assumptions on the problem data. Moreover, we consider regularization methods of Kaczmarz type in connection with the expectation-maximization (EM) algorithm for solving ill-posed equations. For noisy data, our methods are stabilized extensions of the well established ordered-subsets expectation-maximization iteration (OS-EM). We show monotonicity properties of the methods and present a numerical experiment which indicates that, in some cases, our extended OS-EM methods are faster than the standard EM algorithm.

The talk is based on joint work with

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